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EXAMINER

HUNG, YUBIN

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/812,051	Applicant(s) MIWA ET AL.	
	Examiner YUBIN HUNG	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 January 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,5,7 and 9-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 5, 7 and 9-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/21/07</u> . | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment/Arguments

1. This action is in response to amendment filed 01/31/08, which has been entered.
2. Claims 2, 4, 6 and 8 have been canceled. Currently claims 1, 3, 5, 7 and 9-18 are still pending.
3. In view of Applicant's amendment, the objection to the specification, including claim 4 (canceled), has been withdrawn.
4. In view of Applicant's cancellation, the 35 USC § 112 rejection of claim 4 has been withdrawn.
5. In view of Applicant's amendment, the 35 USC § 101 rejection of claims 16-18 has been withdrawn.
6. Applicant's amendment has rendered moot the 35 USC § 103 rejection of claims 1, 3, 5, 7, 9, 11, 13, 14, 16 and 17. Therefore, the rejections have been withdrawn. However, upon further consideration, a new ground of rejection is made. See the 35 U.S.C. 103 rejection section below.

7. Applicant argues that Herley segments image data not by employing, as boundaries, portions where characteristics between the pixels change (P. 10, 1st paragraph, especially the last 3 lines).

However, as clearly indicated in the rejection of claim 1, Herley discloses automatically generating an edge map, using the map to detect the boundaries, and then using the boundaries to segment an image into objects; the edge map is generated based on a set of transitions between colors (of pixels), i.e., where there is color (a kind of image characteristics) change between pixels (the background color is the color of background pixels). [Paragraph 5; see also Fig. 6 and paragraphs 17-18, 51 for more detail.] Therefore the argument is not persuasive.

8. Applicant further argues that Tsukada fails to disclose or suggest that the image correction device corrects the pixel information of the pixels constituting the portions based on characteristic information of two image object regions that surround the portions, as recited in claim 1 (P. 10, 2nd & 3rd paragraphs).

However, this argument is directed at the newly added limitation and will be addressed in the 35 USC 103 rejection section below.

9. Regarding the argument for the allowability of claims 13 and 16 (p. 10, 5th paragraph), since it is directed at similar features as claim 1, the examiner's response above (paragraphs 7 and 8) applies.

10. Regarding the argument for the allowability of claims 3, 5, 7, 9-12, 14, 15, 17 and 18 (p. 10, 5th paragraph), since the allowability of the respective independent claims has not been established, the inherited allowability has not, either.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1, 3, 5, 7 and 9-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herley (US 2002/0146173), and further in view of Tsukada (US 7,016,075) and Miyabata et al. (5,418,574).

13. Regarding claim 1, and similarly claims 13 and 16, Herley discloses

- a region segmentation device that segments a target image composed of a plurality of pixels into a plurality of image object regions by employing, as boundaries, portions where characteristics between the pixels change
[Fig. 1, ref. 102 (considered as the device); Fig. 6; paragraphs 5, 14-18 and 51]

Herley does not expressly disclose the following, which is taught by Tsukada:

- an image correction device that corrects the pixel information of the pixels constituting the image object region based on region characteristic information indicating a representative characteristic of the image object region, for each of the image object region segmented by the region segmentation device

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[Fig. 4; Col. 9, lines 12-29 & 44-45. Note that ref. 13 extracts representative color (a characteristic) for an object (i.e., region) and that plural (obviously including all) objects can be selected for correction (Col. 9, lines 44-45). Note further that paragraphs 2-5 of Herley clearly suggest processing (e.g., highlighting) all segmented objects and color correction is a form of image processing]

The combined invention of Herley and Tsukada does not expressly disclose the following, which is taught by Miyabata

- wherein the image correction device corrects the pixel information of the pixels constituting the portions based on characteristic information of two image object regions that surround the portions

[Figs. 8b (with reference to Fig. 11a: color correcting region left of the boundary), 9b (color correcting region right of the boundary), 11a & 25 (color correcting boundary portion pixels); Col. 15, lines 32-62; Col. 17, lines 5-35; Col. 20, line 49-Col. 22, line 32. Note that pixels between (but not including) n1 and n2 are considered to be in the boundary portion with n1 and n2 respectively belonging to the two regions surrounding the boundary portion (see Fig. 11a). The colors, CD1 and CD2, respectively, of n1 and n2 (considered characteristic information of the two surrounding regions) are used to correct pixel information in the boundary portion, as can be seen from Fig. 25 and the equation on line 15 of column 21]

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Herley with the teachings of Tsukada and Miyabata as recited above to obtain the invention as specified in claim 1. The reasons for doing so at least would have been to realize excellent color correction to obtain color reproduction favorable to a human, as Tsukada indicates in Col. 1, lines 15-21 and Col. 2, lines 49-53, as well as to compensate for the unnatural emphasis on the contours resulted from color correction, as Miyabata indicates in Col. 20, lines 49-68.

14. Regarding claim 3, and similarly claims 14 and 17, Tsukada further discloses

- a region characteristic calculation device that calculates the region characteristic information of the image object region based on the pixel information of the pixels constituting the image object region
[Fig. 4, ref. 13; Col. 9, lines 18-20]

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- a correction function setting device that sets a correction function for correcting the pixel information of the pixels constituting the image object region based on the region characteristic information of the image object region calculated by the region characteristic calculation device [Fig. 4, ref. 15 (correction function setting); Fig. 7; Col. 9, lines 22-26; Col. 10, lines 6-29 & 37-67. Note that each set of parameters determines a different (parameterized) correction function]
- a pixel information correction device that corrects the pixel information of the pixels constituting the image object region based on the correction function that was set by the correction function setting device [Fig. 4, ref. 16; Col. 9, lines 27-30; Col. 10, lines 31-37]

15. Regarding claim 5, Tsukada further discloses that the correction function setting device maps the correction function with application conditions that define a plurality of the region characteristic information conditions [Figs. 6 & 7; Col. 10, lines 19-29] and retrieves the correction function corresponding to the application conditions that are satisfied by the region characteristic information from the plurality of correction functions based on the region characteristic information of the image object region [Fig. 8; Col. 10, lines 6-18].

16. Regarding claim 7, Tsukada further discloses that the correction function setting device retrieving the application conditions to which the region characteristic information of the image object region corresponds, based on a correction function table that maps and registers a plurality of application conditions and correction functions, and retrieves the correction function corresponding to the retrieved application conditions [Fig. 7 & 8; Col. 10, lines 6-29; note that Fig. 7 is a correction function table and that the representative color of an object is its region characteristic information].

17. Regarding claim 9, Tsukada further discloses that the correction function setting device setting any one of the correction function table of a plurality of the different

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correction function tables with respect to one or a plurality of the image object regions and setting the correction function for correcting the pixel information of the pixels constituting the image object region based on the region characteristic information of the image object region and the correction function table that was thus set [Fig. 7 & 8; Col. 10, lines 6-29; note that Fig. 7 is a correction function table and that there is one such table for each object].

18. Regarding claim 10, and similarly claims 15 and 18, the combined invention of Herley, Tsukada and Miyabata further discloses:

- a boundary region detecting device that detects, based on prescribed region recognition conditions, as a boundary region, the pixel group which is the pixel group present on a boundary of the two adjacent image object regions
[Herley: Fig. 6; paragraphs 5, 18-21 and 51; especially paragraphs 18-19. Note that the determined background is considered an object itself.]
- that the boundary region also includes pixels in the vicinity of the boundary and is composed of the pixels having characteristics intermediate between the respective characteristics of the two image object regions
[Miyabata: Fig. 11a; Col. 22, lines 16- 32. Note that pixels between n1 and n2 are considered to be in the boundary region]

19. Regarding claim 11, note that per paragraph 18 of Herley a boundary pixel is sandwiched between two objects (note that background is by itself an object region); therefore claim 11 is rejected based on this disclosure and along with the analysis of claim 10 above

20. Regarding claim 12, Miyabata further discloses

- the correction function setting device correcting the pixel information of the pixels constituting the boundary region based on a first correction function which is the correction function set by the region characteristic information of the first image object region and a second correction function which is the correction function set by the region characteristic information of the second image

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object region, where the first image object region and second image object region are the two image object regions sandwiching the boundary region
[Figs. 8b (color correcting region left of the boundary), 9b (color correcting region right of the boundary), 11a & 25 (color correcting boundary pixels); Col. 15, lines 32-62; Col. 17, lines 5-35; Col. 20, line 49-Col. 22, line 32. Note that pixels between (but not including) n1 and n2 are considered to be in the boundary area and n1 and n2 (belonging to two surrounding regions) are on either side of the boundary area (see Fig. 11a) that have already been color corrected (see 8b and 9b). Note further that equation on line 15 of column 21 corrects boundary portion pixels based on the values CD1 and CD2 of pixels n1 and n2, respectively, which are in the two surrounding regions. Additionally, per the analysis of claim 1 Tsukada discloses color correcting different regions based on their region characteristics therefore the border pixel correction to thus corrected regions will be based on their corresponding correction functions]

Conclusion and Contact Information

21. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

22. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to YUBIN HUNG whose telephone number is (571)272-7451. The examiner can normally be reached on 7:30 - 4:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew C. Bella can be reached on (571) 272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

24. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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April 8, 2008